International Standards for Managing Emerging and Re-emerging Zoonoses of Public Health Significance: A Call for Horizontal Collaboration Between Intergovernmental Organizations

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As the number of infectious diseases has increased over the last several years in both animal species and humans, the urgency of horizontal collaboration between international animal and public health organizations has become more evident. Any disease agent that transfers from an animal source into humans is considered a zoonoses. Seventy five percent of all emerging diseases that have affected people over the last two decades are of the zoonotic variety. The convergence of animal and human disease threats mandates corresponding convergence between animal and public health officials. This comment focuses on existing international organizations and their approach to international law for the surveillance and control of emerging and re-emerging zoonotic diseases. It examines zoonoses in general and surveys the organizational components and existing activities of the WHO, OIE, FAO, and WTO concerning zoonoses. It weighs the effectiveness of the collaboration of these international organizations and advocates for a more aggressive approach.

I. Introduction

Infectious diseases do not contemplate borders or territories, and "no country, rich or poor, is immune" from them.[1] As the number of infectious diseases has increased over the

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1. K. Ben Jebara, *Surveillance, Detection and Response: Managing Emerging Diseases at National and International Levels*, 23(2) SCI. & TECHNICAL REV. 423, 710 (2004), *available at* https://www.oie.int/eng/publicat/rt/2302/PDF/709-716Ben%20Jebara.pdf.

last several years in both animal species and humans,[2] the urgency of horizontal collaboration between international animal and public health organizations has become more evident.[3] This urgency is more clearly represented by the fact that "75 percent of all emerging diseases that have affected people over the last two decades have occurred as a result of an animal pathogen moving into the human host."[4] Any disease agent that transfers from an animal source into humans is considered a zoonoses.[5] Emerging infectious diseases of the zoonotic variety have received wide attention with the Severe Acute Respiratory Syndrome (SARS) outbreak[6] and the more recent concern over an avian H5N1 influenza pandemic.[7] Other examples of recent emerging zoonoses include Ebola virus, bovine spongiform encephalopathy (BSE), Nipah virus, Rift Valley fever, alveolar echinococcosis, and monkeypox.[8] Many of the new animal-borne infections share a common feature in that they have the potential to quickly expand from local to international significance.[9]

The implication of a global threat from emerging and re-emerging zoonoses belies any solution that purely focuses on human health services. The convergence of animal and human disease threats mandates corresponding convergence between animal and public health officials.[10] A recent example of such convergence took place in October 2006, when five international organizations gathered to advise the World Organization for Animal Health (OIE) on funding to help promote good governance of international standards worldwide, with a particular emphasis on developing countries, for dealing with disease outbreaks and related issues.[11] The World Bank, the World Trade Organization (WTO), the Food and Agriculture Organization of the United Nations (FAO), the World Health Organization (WHO), and the OIE met to discuss use of the fund so that countries can "improve early detection and respond more rapidly to animal diseases outbreaks," including zoonoses.[12] The fund, in its second year, had only received $13 million up to that point, but the meeting also opened dialogue for establishing a communication

2. S.S. Morse, *Factors and Determinants of Disease Emergence*, 23(2) SCI. & TECHNICAL REV. 423, 443 (2004), *available at* https://www.oie.int/eng/publicat/rt/2302/PDF/443-452morse.pdf.

3. L.J. King, N. Marano & J.M. Hughes, *New Partnerships Between Animal Health Services and Public Health Agencies*, 23(2) SCI. & TECHNICAL REV. 423, 718 (2004), *available at* https://www.oie.int/eng/publicat/rt/2302/PDF/717-726king.pdf (discussing the need for the creation of more effective and co-operative partnerships between both human and animal health services in the face of new microbial threats and the expansion and complexity of zoonoses).

4. C. Brown, *Emerging Zoonoses and Pathogens of Public Health Significance- an Overview*, 23(2) SCI. & TECHNICAL REV. 423, 435 (2004), *available at* https://www.oie.int/eng/publicat/rt/2302/PDF/435-442brown.pdf.

5. *Id.*

6. David P. Fidler, *Global Challenges to Public Health: SARS: Political Pathology of the First Post-Westphalian Pathogen*, 31 J.L. MED. & ETHICS 485, 490 (2003).

7. Lawrence O. Gostin, *Pandemic Influenza: Public Health Preparedness for the Next Global Health Emergency*, 32 J.L. MED. & ETHICS 565, 565 (2004).

8. Brown, *supra* note 4, at 436-37.

9. King et al., *supra* note 3, at 719.

10. *Id.* at 718.

11. Press Release, World Trade Organization [WTO], International Bodies Join Forces to Advise OIE Animal Health and Welfare Fund (Nov. 1, 2006), http://www.wto.org/english/news_e/pres06_e/pr456_e.htm.

12. *Id.*

mechanism for consultation between the organizations.[13] Though this meeting was a small step in horizontal collaboration, "[t]he global threat posed by emerging and re-emerging infectious diseases mandates national and international action and cooperation to control and combat them."[14]

This comment focuses on existing international organizations and their approach to international law for the surveillance and control of emerging and re-emerging zoonotic diseases. Part II examines zoonoses in general to familiarize the reader with how these pathogens emerge and effect humans. Part III examines the organizational components and the existing activities of the WHO, OIE, FAO, and WTO concerning zoonoses. Part IV weighs the effectiveness of the collaboration of these international organizations in the global community for the protection of human health. Finally, Part V advocates for a more aggressive collaboration between these international organizations and calls for international recognition that human and animal health systems can no longer work in isolation of each other.

II. Zoonoses in General

"Zoonotic infections clearly play a central role in emerging infectious disease in humans."[15] A total of 1,415 species of infectious organisms have been identified as pathogenic to humans.[16] Of these, 61 percent are zoonotic.[17] The number of pathogenic species considered to be emerging diseases are 175, with 75 percent being zoonotic.[18] "[Z]oonotic species are overall twice as likely to be associated with emerging diseases than non-zoonotic species."[19] A disease is considered emerging when a previously unknown disease has appeared in the human population for the first time,[20] a known disease has appeared in a new geographic area or increased in incidence,[21] or a known disease has occurred in an unsusceptible species.[22] Re-emerging diseases are diseases that were once decreasing but now have a rapid increase in incidence again.[23]

> Classical public health and sanitation measures have long served to minimise dissemination and human exposure to many pathogens which are spread by traditional routes

13. *Id.*

14. Allyn L. Taylor, *Controlling the Global Spread of Infectious Diseases: Toward a Reinforced Role for the International Health Regulations*, 33 HOUS. L. REV. 1327, 1328 (1997).

15. C. Bolin, C. Brown & J. Rose, World Health Organization, *Emerging Zoonotic Diseases and Water*, *in* WATERBORNE ZOONOSES: IDENTIFICATION, CAUSES AND CONTROL 19, 20 (J.A. Contruvo et. al. eds., IWA Publishing 2004), *available at* http://www.who.int/water_sanitation_health/diseases/zoonosessect2.pdf.

16. Louise H. Taylor et al., *Risk Factors for Human Disease Emergence*, 356 PHIL. TRANSACTIONS ROYAL SOC'Y LONDON SERIES B: BIOLOGICAL SCI. 983, 984 (2001), *available at* http://www.journals.royalsoc.ac.uk/media/9cxu7yfyvg6xxn5p9g7t/contributions/u/1/3/6/u136dqjx862c6u7n.pdf.

17. *Id.* at 985 (explaining the taxonomic divisions of the zoonotic species where overall 19% are viruses, 31% are bacteria, 13% are fungi, 5% are protozoa, and 32% are helminthes).

18. *Id.* at 985-86.

19. *Id.* at 986.

20. *Id.* at 984; *See also* Morse, *supra* note 2, at 444 (noting the Hendra virus in Australia and the Nipah virus in Asia as examples where diseases were unknown to humans before the 1990s, but have probably existed for a long time in the fruit bat species, which are the natural reservoirs for these viruses).

21. Brown, *supra* note 4, at 435.

22. *Id.*

23. Morse, *supra* note 2, at 447.

(such as water or food), or are preventable by immunisation or vector control. However, the pathogens themselves often still remain, in small pockets of infection, and may therefore re-emerge if circumstances allow.[24]

A. The Epidemiological Patterns of the Exposure of Humans to Zoonoses

The exposure of humans to zoonoses results from two major epidemiological patterns: either direct or indirect contact between human and wild or domestic animal hosts.[25] Under the direct contact pattern, "there is a point source of exposure of humans to the zoonotic agent, and then the disease is transmitted among, and often maintained in, humans."[26] In other direct contact cases, the disease is vectored from the animal that serves as the reservoir for the agent to the human, often by blood-feeding arthropods.[27] "[A]nimals serve as the reservoir for the agent, and the infection 'spills over' to humans, with little transmission between humans."[28] In this latter situation, if the agent is not constantly vectored or reintroduced, the infection will die out in the human population.[29] "[I]f the reservoir host or vector becomes more widely disseminated or there is more frequent human contact, the microbe can appear in new places."[30]

The second epidemiological pattern involves indirect contact through foods, water, environmental contamination, or other methods of transmission that are not reliant on direct contact between the human and animal hosts.[31]

Zoonotic infections vary greatly in their ability to disseminate within the human population.[32] Direct contact accounts for the transmission of 35 percent of zoonotic pathogens.[33] Indirect contact accounts for 61 percent, 22 percent by vectors, and for 6 percent the transmission route is unknown.[34] "Only 33 percent of zoonotic species are known to be transmissible between humans and only 3 percent of all the zoonotic species are considered to have their main reservoir in human populations; the remainder have their main reservoir in animal populations."[35] Even though there are a great number of possible zoonoses, "relatively few succeed in establishing themselves within the human population."[36] Both SARS[37] and avian H5N1 influenza[38] are the most recent notable exceptions

24. *Id.*

25. Bolin et al., *supra* note 15, at 20.

26. *Id.* (providing the example of human immunodeficiency virus).

27. Christopher Pepper et al., *Threatened or Endangered? Keystone Species or Public Health Threat? The Black-Tailed Prairie Dog, the Endangered Species Act, and the Imminent Threat of Bubonic Plague*, 24 J. Land Resources & Envtl. L. 355, 366 (2004). Common zoonotic diseases vectored to humans by blood-feeding arthropods include the West Nile virus (cycle involves birds and mosquitos) and Lyme disease (cycle involves white-tailed deer and ticks). *Id.*

28. Bolin et al., *supra* note 15, at 20-21 (providing the example of the Ebola virus).

29. *Id.* at 21.

30. Morse, *supra* note 2, at 444 (Noting the bubonic plague and rat-borne hantavirus infections "are among the historical infections that have spread as their rat hosts have been introduced into new locations").

31. Bolin et al., *supra* note 15, at 21.

32. Morse, *supra* note 2, at 444.

33. Taylor et al., *supra* note 16, at 985.

34. *Id.*

35. *Id.*

36. Morse, *supra* note 2, at 444 (noting that even the most dramatic outbreaks such as Ebola, Lassa Fever, and Nipah viruses, are poorly transmitted from person to person despite their rapid course and high mortality).

because of their transmissibility. But even if the zoonotic agent is not able to transmit readily from human to human and establish itself within the human population, there may be a secondary spread through nosocomial infection, such as "breaches in infection control" in hospital settings.[39]

B. Factors for the Emergence of Zoonotic Disease

Disease emergence is often the unintended consequence of human actions.[40] In other instances, it may be natural causes that result in such emergence.[41] There are several factors that have been identified as contributing to the emergence of diseases, including: "ecological changes, such as those due to agricultural or economic development or anomalies in climate, human demographic changes and behaviour, travel and commerce, technology and industry, microbial adaptation and change, the breakdown of public health measures,"[42] and bioterrorism and intentional use.[43]

Ecological changes and disruption may be one of the most dangerous factors in the emergence of new zoonotic diseases.[44] "As humans encroach on new habitat, it is a certainty that they will be exposed to novel pathogens that could move from their four-footed or avian niches into humans to engender disease."[45] One classic example of the intrusion of humans into an isolated ecosystem is the emergence of yellow fever when humans entered the jungles of Central America to build the Panama Canal.[46] Agricultural development is one of the most common ways in which humans alter an environment and interact with it allowing emergence.[47] The ecological changes under agricultural development can include conversion of native lands into different agricultural cultivation, the use of pesticides, and the use of live animal markets and other settings in which different species may be housed closely together at high densities.[48] Other ecological changes can include those due to economic development and land use,[49] including the addition of dams and other changes in water ecosystems, deforestation or reforestation, mining, logging,[50] and the expansion of primitive irrigation systems.[51] Global warming may be another ecological effect that can result in the emergence of new zoonotic diseases.[52]

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37. *See* Fidler, *supra* note 6, at 435.
38. *See* Gostin, *supra* note 7, at 565.
39. Morse, *supra* note 2, at 444 (noting that the major secondary spread of the Ebola, Lassa fever, and SARS infections has been within healthcare settings, "through breaches in infection control or contaminated injection equipment").
40. *Id.*
41. *Id.*
42. *Id.*
43. Brown, *supra* note 4, at 439.
44. *Id.*
45. *Id.*
46. Frederick A. Murphy, *Emerging Zoonoses*, 4 Emerging Infectious Diseases (Special Issue) 429, 430 (July-Sept. 1998), *available at* ftp://ftp.cdc.gov/pub/EID/vol4no3/adobe/murphy.pdf.
47. Morse, *supra* note 2, at 446.
48. *Id.*
49. *Id.* at 445.
50. *Id.*
51. Murphy, *supra* note 46, at 430-31.
52. *Id.*

Human demographic changes such as "[s]pectacular population growth and poverty have led to, among other things, overcrowding in cities forcing millions of people to live in unsanitary conditions ripe for infectious diseases."[53] Political instability, war, and conflict have also resulted in massive population migration from one country or region to others, potentially exposing new infectious diseases to populations with no previous experience with a particular pathogen.[54] The economic disparity between developed nations and those developing has significantly increased the threat of emerging diseases in the economically impoverished nations.[55] Specific factors in human behavior that can result in emergence includes the commercial sex trade, intravenous drug use, outdoor recreation, and the use of childcare facilities and other high-density settings.[56]

Technology, travel, trade, and globalization have contributed to the increase in emergent zoonotic diseases.[57] "As the world's populations are brought closer together through transportation, trade, and commerce, there is a growing recognition that the distance between nations and regions offers no protection against disease transmission and that the risk of international disease spread is increasing."[58] With the high growth of international and domestic air travel and transport, even the remote parts of the world are routinely accessible, and "the threat of worldwide infectious disease spread has increased correspondingly."[59] The threat of the diseases spreading is compounded due to population expansion and the increase in the number of densely populated cities.[60] On the technology and trade side, "[h]igh-intensity production of food animals may allow a pathogen which is present in a small subpopulation to become more widespread."[61] The technology and rapid trade of the food industry allows for increased yield efficiency and reduced costs but can also increase the chances of accidental contamination and amplify the effects of such a contamination.[62] Globalization altogether compounds each of the problems contributing to the increase in emerging zoonoses.[63]

One of the most important causes of re-emerging diseases is antibiotic resistance.[64] The adaptation of microbes and antibiotic resistance of pathogens can increase the rate of transmissibility of zoonoses.[65] "Pathogens can . . . acquire new antibiotic resistance genes from other, often non-pathogenic, species in the environment, selected for or perhaps even driven by the selective pressure of antibiotics."[66] The re-emergence of tuberculosis

53. Taylor, *supra* note 14, at 1335-36.

54. *Id.* at 1336.

55. John D. Blum, *Global Health and Wellness: A Response to International Health Threats: Law as Development: Reshaping the Global Legal Structures of Public Health*, 12 MICH. ST. J. INT'L L. 207, 209-10 (2004).

56. Morse, *supra* note 2, at 445.

57. *Id.* at 447.

58. Taylor, *supra* note 14, at 1337.

59. Michelle Forrest, *Using the Power of the World Health Organization: The International Health Regulations and the Future of International Health Law*, 33 COLUM. J.L. & SOC. PROBS. 153, 158-59 (2000).

60. *Id.*

61. Morse, *supra* note 2, at 447.

62. *Id.*

63. *Id.*

64. Forrest, *supra* note 59, at 157.

65. Morse, *supra* note 2, at 447.

66. *Id.*

in the early 1990s is an example where antibiotic resistance resulted in the spread of the disease.[67]

Breakdowns in disease prevention and control measures can lead to the appearance of re-emerging diseases.[68] Even though a pathogen's transmission has been minimized or perhaps it is preventable by immunization, the pathogens themselves remain in small pockets of infection.[69] Complacency in surveillance or any lapse in control measures can allow such re-emergence.[70] Such lapses may include curtailment or reduction in disease prevention programs, or even a lack of, or inadequate sanitation and vector control measures.[71] But beyond localized lapses in control measures, often the breakdowns in the international arena are the result of countries having "deep reservations about yielding their sovereignty to multinational authorities."[72] Some countries prefer to regulate health threats through bilateral or regional agreements, breaking away from the imposition of rules by international health agencies.[73] In other situations, even when a country is working to comply with international health agencies, built-in incentives for secrecy and inaction in the face of emerging diseases may lead the country to isolate itself.[74] "Public notifications about health hazards can adversely affect a country's economy and prestige. It can trigger media coverage or travel advisories affecting trade and tourism and adversely affect the reputation and electoral prospects of political leaders."[75] China's response to the SARS outbreak was to try to hide, deny, and prevent any information about the emerging disease from leaking outside the country.[76] Four months into the outbreak, China claimed the disease was under control and prohibited state-controlled media from reporting on the outbreak.[77] China did not fully disclose the extent of the outbreak until six months after the start of the outbreak.[78]

The final factor in infectious disease emergence is bioterrorism or intentional use of zoonotic diseases. "[M]ost of the classical agents listed in association with bio-warfare and bio-terrorism are also zoonotic, including, among others: anthrax, plague, tularaemia, [and] various hemorrhagic fever viruses."[79] Although bio-terror agents are all previously known pathogens, there is always a possibility that an amateur or professional microbiologist could slightly alter an organism to create and unleash a new disease.

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67. Forrest, *supra* note 59, at 157-58 (noting that in 1992 tuberculosis killed more people worldwide than any other infectious disease).

68. Morse, *supra* note 2, at 447.

69. *Id.*

70. *Id.*

71. *Id.* at 445.

72. Lawrence O. Gostin, *World Health Law: Toward a New Conception of Global Health Governance for the 21st Century*, 5 YALE J. HEALTH POL'Y L. & ETHICS 413, 419 (2005),

73. *Id.*

74. *Id.* at 418.

75. *Id.*

76. Fidler, *supra* note 6, at 491-92.

77. *Id.*

78. *Id.*

79. Morse, *supra* note 2, at 445.

III. International Standards for Zoonotic Disease Control

International "public health law is comprised of several multilateral treaties, along with the rules, regulations, and dispute resolution mechanisms of a number of global public entities."[80] Several intergovernmental agencies have been provided with the authority to implement international standards for the prevention and control of infectious diseases. The agencies fall within three areas of control: animal health, public health, and trade. For purposes of this comment, the standards and controls of the OIE, WHO, FAO, and WTO will be reviewed. Though the end goal of the WHO, OIE, and FAO is the prevention of infectious disease in the human population, it has more recently grown in importance to collaborate efforts in both public and veterinary health services to prevent the spread of zoonotic diseases, particularly emerging zoonoses.[81] As far as the WTO and trade law, "given that its objective is to promote commerce rather than any type of social agenda, the impact of trade law on health products and services, as well as its impact on economic development, make it an area of great import for public health."[82]

A. The World Health Organization

The WHO was mandated under article 57 of the U.N. Charter and went into force in 1951.[83] The WHO stands as the primary international organization charged with addressing health concerns, including threats posed by infectious diseases.[84] Under article 2(k) of its constitution, the WHO has the power to adopt conventions, treaties, and agreements within its areas of competence.[85] Article 21 of its constitution gives the World Health Assembly[86] (WHA) the authority to create binding regulations in five health-related areas:

> (1) sanitary and quarantine requirements; (2) nomenclatures on diseases, causes of death and public health practices ; (3) standards for diagnostic procedures for international use; (4) standards for the safety, purity and potency of biological, pharmaceutical and similar products moving into international use; and (5) advertising and labeling of biological, pharmaceutical and similar products.[87]

The regulations that are adopted by the WHA are binding upon the 193 WHO member states unless a member notifies the WHO that it wishes to opt out of a particular regulation.[88]

The adoption of the International Health Regulations (IHR) is one of the few areas where the WHO has drafted and enacted international law for the prevention and control

80. Blum, *supra* note 55, at 213.
81. King et al., *supra* note 3, at 722.
82. Blum, *supra* note 55, at 214.
83. *Id.* at 215.
84. Forrest, *supra* note 59, at 153.
85. Blum, *supra* note 55, at 215; *see* WHO Const., July 22, 1946, art. 2, *in* WHO, Basic Documents (45th ed. 2006), *available at* http://www.who.int/governance/eb/who_constitution_en.pdf.
86. The WHO governing body. *See* WHO Const., arts. 21 & 22, *in* WHO, Basic Documents (45th ed. 2006), *available at* http://www.who.int/governance/eb/who_constitution_en.pdf.
87. Blum, *supra* note 55, at 215.
88. *Id.*

of infectious diseases.[89] "The IHR is an attempt to combat the global spread of communicable diseases by requiring member states to develop comprehensive surveillance and reporting programs, as well as establish particular procedures in the event of an outbreak."[90] The WHO underwent a revision process of the IHR in the mid-1990s,[91] and the revised IHR (IHR 2005) were unanimously approved on May 23, 2005, by the WHA and were scheduled to go in force in June 2007.[92] The last major revision was in 1969 (IHR 1969).[93]

Under IHR 1969, countries were only required to report outbreaks of cholera, plague, and yellow fever within their borders.[94] The IHR 1969 and the WHO actions under the IHR 1969 were criticized by many commentators. The limited application of the IHR to the three types of outbreaks was growing more and more outdated, as there were increases in emerging and re-remerging diseases.[95] IHR 1969 also outlined the "sanitary conditions, health personnel and services to be maintained at national frontiers, particularly airports and seaports, and what maximum measures national authorities may enact to protect their territories" from the regulated diseases.[96] This emphasis on the measures and conditions at member states' borders was also outdated because infectious disease is a problem that does not contemplate borders or frontiers.[97] Another long-standing problem of the application of the IHR 1969 was the failure of states to report the outbreak of diseases subject to the regulations. The "WHO traditionally has relied upon government self-reporting as the sole source of information and does not utilize any mechanism to encourage national compliance with the reporting procedures."[98] The non-reporting of such outbreaks leads to gaps in the international surveillance system and does not allow the WHO to officially inform other states of the outbreak before they are widely reported by international news.[99] The non-reporting of outbreaks is often tied to the economic incentive of preventing the loss of travel and trade due to an outbreak. The IHR 1969 and the WHO were unable to control the imposition of over-aggressive economic measures taken by member states when learning of another member state's outbreak.[100] There is no system in place by the WHO for fining or penalizing member states that impose unreasonable economic measures on the affected country.[101]

The IHR 2005 made significant changes to address some of these problems. The overall objective of IHR 2005 is to "provide for surveillance, transparency, and rapid response, the three fundamental elements required in battling an outbreak of communicable dis-

89. Forrest, *supra* note 59, at 154.

90. Blum, *supra* note 55, at 216.

91. *Id.*

92. Press Release, World Health Organization (WHO), World Health Assembly Adopts New International Health Regulations (May 23, 2005), http://www.who.int/mediacentre/news/releases/2005/pr_wha03/en/index.html (last visited Feb. 5, 2007).

93. Forrest, *supra* note 59, at 162.

94. *Id.*

95. *Id.* at 165.

96. Taylor, *supra* note 14, at 1344.

97. *Id.*

98. *Id.* at 1349.

99. *Id.*

100. Forrest, *supra* note 59, at 166-67.

101. *Id.*

ease."[102] IHR 2005 eliminates IHR 1969's limitation of the reporting of three disease outbreaks and requires member states to notify the WHO "of all events which may constitute a public health emergency of international concern within its territory . . . as well as any health measure implemented in response to the events."[103] IHR 2005 not only expands its governance framework to all potential public health emergencies, but it also significantly expands the duties of WHO member states. IHR 2005 requires the WHO and member states to maintain IHR focal points that are to provide and receive information from the IHR contact points of the WHO on a twenty-four hour basis.[104] This requirement ensures a focused communication link between the member state and the WHO.

The goal of Article 5 of IHR 2005 is to increase national surveillance by requiring member states to "develop, strengthen and maintain, as soon as possible but not later than five years . . . the capacity to detect, assess, notify and report" events that may constitute a public health emergency of international concern.[105] Such duties are far more intrusive on the member states than previous regulations on infectious disease control.[106] Another important revision to improve global surveillance is the WHO's use of non-governmental sources of information, "relying solely on governments to provide outbreak information under formal international legal obligations proved a failure under the IHR [1969]."[107] IHR 2005 allows the WHO to take into consideration reports and information from sources other than the member state's IHR focal point. The WHO may use the Internet, email, or other information technologies to "mine non-governmental sources of information in order to enhance global surveillance."[108] The WHO is permitted to take action based on such information but must first consult with the member state where the event is allegedly occurring.[109] Where it is "duly justified," the WHO may maintain the confidentiality of the source.[110]

IHR 2005 contains verification and recommendation measures that guide the WHO and provide transparency and rapid response to events that may constitute a public health emergency of national concern. "When WHO receives information of an event that may constitute a public health emergency of international concern, it shall offer to collaborate with the State Party concerned in assessing the potential for international disease spread,

102. David Byrne, *Plenary Session: Is There a Lawyer in the House: The Law of Global Public Health*, 33 J.L. MED. & ETHICS 19, 20 (2005).

103. WHO, *Revision of the International Health Regulations*, WHA Res. 58.3, art. 6, ¶ 1, World Health Assembly, 58th Ass. (May 23, 2005), *available at* http://www.who.int/gb/ebwha/pdf_files/WHA58/WHA58_3-en.pdf [hereinafter IHR 2005]. The IHR 2005 provides a decision instrument in Annex 2 to help member states identify what may or may not constitute a public health emergency of international concern.

104. *Id.* at art. 4, ¶ 2.

105. *Id.* at art. 5, ¶ 1.

106. Eric Mack, Comment, *The World Health Organization's New International Health Regulations: Incursion on State Sovereignty and Ill-fated Response to Global Health Issues*, 7 CHI. J. INT'L L. 365, 371 (2006).

107. Fidler, *supra* note 6, at 489 (noting that "[p]rior to the IHR revision process, WHO had access to non-governmental sources of information but, in law and policy, was limited in how it could use them. Legally, the IHR operated only on the basis of government-provided information.").

108. *Id.*

109. *See* IHR 2005, *supra* note 103, at art. 9, ¶ 1.

110. *Id.*

possible interference with international traffic and the adequacy of control measures."[111] But if the member state

> does not accept the offer of collaboration, WHO may, when justified by the magnitude of the public health risk, share with other States Parties the information available to it, whilst encouraging the State Party to accept the offer of collaboration by WHO, taking into account the views of the State Party concerned.[112]

If the WHO determines that a public health emergency of international concern is occurring, it shall issue temporary recommendations[113] or standing recommendations[114] in response to the emergency.

Temporary recommendations may include health measures to be enacted by the member state affected or other member states "regarding persons, baggage, cargo, containers, conveyances, goods and/or postal parcels to prevent or reduce the international spread of disease and avoid unnecessary interference with international traffic."[115] The temporary recommendations will automatically expire after three months but may be modified or extended for additional periods up to three months and may not continue past the second WHA after determination of the public health emergency.[116] The WHO may issue standing recommendations that involve similar coverage of health measures, but with respect to "specific, ongoing public health risks."[117]

Though the broader governance framework of the IHA 2005 is concerned with all diseases that constitute a public health emergency, the WHO has also taken specific steps to address emerging and re-emerging diseases of the zoonotic variety by focusing on Veterinary Public Health (VPH). VPH is defined by the WHO as "the sum of all contributions to the physical, mental and social well-being of humans through an understanding and application of veterinary science."[118] The WHO works through its regional offices to support member states in "the surveillance and containment in humans and animals of zoonoses and foodborne zoonotic diseases of public health importance, and animal diseases with known or potential public health implications; and in the surveillance and containment of resistance to antimicrobial agents in animals, with implications for human medicine."[119]

WHO headquarters implements VPH activities through its Department of Communicable Diseases Control, Prevention and Eradication (CPE) in close collaboration with the Food Safety Programme.[120] The WHO has VPH focal points in all of its regional offices.[121] The VPH program has been closely linked with the FAO and the OIE regarding zoonoses, food safety, and the public health aspects of trade in animals and animal prod-

111. *Id.* at art. 10, ¶ 3.
112. *Id.* at art. 10, ¶ 4.
113. *Id.* at art. 15.
114. *Id.* at art. 16.
115. IHR 2005, *supra* note 103, at art. 15, ¶ 2.
116. *Id.* at art. 15, ¶ 3.
117. *Id.* at art. 16.
118. WHO Veterinary Public Health, http://www.who.int/zoonoses/vph/en/ (last visited February 25, 2007) [hereinafter WHO VPH]. .
119. *Id.*
120. *Id.*
121. *Id.*

ucts.[122] The WHO also collaborates with universities, research centers, and institutions regarding VPH matters.[123]

The WHO currently lists the following objectives under its VPH activities:

- Identifying and evaluating microbiological hazards to human health of animal origin: new, emerging and re-emerging zoonotic diseases, and foodborne diseases, including those due to antimicrobial resistant bacteria.
- Developing policies, guidelines, operational research and strategies for the control of zoonotic and foodborne diseases.
- Promoting research on zoonotic and foodborne diseases and their management in humans.
- Strengthening global surveillance of zoonotic diseases and antimicrobial resistance in foodborne pathogens by enhancing the epidemiological capabilities of national laboratories.
- Disseminating relevant information to experts in public health, veterinary science and other scientific disciplines, as well as to consumer groups and the public.
- Contributing to field and laboratory investigations of zoonotic and foodborne diseases.
- Facilitating active contributions to public health by the veterinary services of Member States, an essential requirement for the cost-effective surveillance and control of zoonotic and foodborne diseases in their animal hosts.
- Providing technical and scientific assistance to Member States for their surveillance and control programmes, when requested.
- Supervising the work of the Mediterranean Zoonoses Control Programme (MZCP).[124]

These objectives serve as a strong basis for the WHO's development of international standards and policies regarding zoonotic diseases, but the barriers to successful implementation are significant. In 2005, the WHO compiled a report for a joint meeting with the United Kingdom's Department for International Development- Animal Health Programme, where such barriers were discussed.[125] One of the most significant barriers is a general lack of funding and a shortage of trained personnel to support control measures for zoonotic diseases.[126] Another barrier is that in many countries, zoonoses are not a priority for either the health or veterinary sectors.[127] There is also a separation between public health and veterinary health sectors due to their differences in emphasis[128] and because of a weak infrastructure in the veterinary sector.[129]

One successful WHO initiated program that specifically addresses zoonoses is the Mediterranean Zoonoses Control Programme (MZCP). MZCP is an interregional program

122. *Id.*
123. *Id.*
124. *Id.*
125. WHO, *The Control of Neglected Zoonotic Diseases: a Route to Poverty Alleviation*, at 23, WHO/SDE/FOS2006.1 (2006), *available at* http://www.who.int/zoonoses/Report_Sept06.pdf [hereinafter Neglected Zoonotic].
126. *Id.*
127. *Id.* at 9.
128. *Id.* at 23.
129. *Id.*

(Mediterranean and Middle East) that has been active since 1978 and focuses on "[p]romoting programmes for the prevention, surveillance and control of zoonoses and related foodborne diseases; strengthening collaboration between animal health and public health services; implementing training activities; promoting veterinary public health activities and public health education; [and] fostering collaboration among Member Countries."[130]

MZCP's main activities consist of workshops and training courses covering various zoonotic and foodborne diseases.[131] Such courses are attended by representatives of the Ministries of Health and Agriculture of the Member countries.[132] Reports and educational materials regarding the presentations and discussions in the workshops and MZCP's recommendations are distributed to the leaders of the responsible authorities in each member state and to international organizations.[133] The MZCP has also organized fieldwork where experts analyze and carry out studies of problem situations in member states and provide recommendations for specific prevention and control activities.[134] The MZCP also organizes special institutions for the training of laboratory staff.[135] Such training is needed in the countries of the region.[136]

In addition to the MZCP, the WHO has formed other alliances and working groups that are focused on specific endemic zoonotic diseases. These groups include: Alliance for Rabies Control (ARC), Cysticercosis Working Group in Eastern and Southern Africa (CWGESA), and the Global Alliance for Livestock Vaccines (GALV).[137]

B. The World Organization for Animal Health

The OIE[138] is one of the oldest veterinary associations in the world and has a long history of establishing international standards and sanitary rules for animal health and the trade of animals and animal products.[139] The OIE was established in 1924 and is comprised of 167 member countries.[140] "[T]he OIE has played a key role in its capacity as the sole international reference organisation for animal health, enjoying established interna-

130. Mediterranean Zoonoses Control Programme of the World Health Organization, http://www.mzcp-zoonoses.gr/presentation.htm (last visited February 25, 2007). MZCP consists of the following full-member states: Bulgaria, Cyprus, Egypt, Greece, Kuwait, Lebanon, Portugal, Saudi Arabia, Spain, Syria and Turkey; while other countries are associated to the MZCP such as, Algeria, Italy, Jordan, Malta, Morocco and Tunisia.

131. Mediterranean Zoonoses Control Programme of the World Health Organization, Introductory Remarks on the WHO/MZCP, http://www.mzcp-zoonoses.gr/ (last visited February 25, 2007) [hereinafter MZCP].

132. *Id.*

133. *Id.*

134. *Id.*

135. *Id.*

136. *Id.*

137. Neglected Zoonotic, *supra* 125, at 27.

138. OIE was created as the Office International Des Epizooties with its headquarters in Paris, France. It now formally refers to itself as the World Organisation for Animal Health, but retains the abbreviation OIE.

139. Terence P. Stewart & David S. Johanson, *The SPS Agreement of the World Trade Organization and International Organizations: The Roles of the Codex Alimentarius Commission, the International Plant Protection Convention, and the International Office of Epizootics*, 26 Syracuse J. Int'l L. & Com. 27, 49 (1998).

140. OIE, What is the OIE?, http://www.oie.int/eng/OIE/en_oie.htm?e1d1 (last visited February 25, 2007).

tional recognition and benefiting from direct collaboration with the Veterinary Services of all its Member Countries."[141]

One of the primary objectives of the OIE is "[t]o ensure transparency in the global animal disease situation."[142] Member countries are to report animal diseases to the OIE, and then the OIE disseminates the information to other countries so they can take the necessary preventative action.[143] If the disease is of serious concern, such information will be disseminated immediately upon notice by the afflicted member country.[144] Another objective of the OIE is to "provide expertise and encourage international solidarity in the control of animal diseases."[145] The OIE provides technical support and recommendations to members requesting assistance with "disease control and eradication operations."[146] Other objectives of the OIE are:

> "[t]o collect, analyse and disseminate veterinary scientific information; to safeguard world trade by publishing health standards for international trade in animals and animal products; [t]o improve the legal framework and resources of national Veterinary Services; [and] [t]o provide a better guarantee of food of animal origin and to promote animal welfare through a science-based approach."[147]

The OIE is responsible for developing and publishing international trade standards and international biological standards for animals and animal products.[148] "These standards are developed through elected Specialist Commissions and are adopted by OIE Member Countries during the annual OIE General Session."[149] The OIE publishes two standards for international trade: the Terrestrial Animal Health Code and the Aquatic Animal Health Code.[150] These standards are given great deference by member countries of the World Trade Organization because the OIE is one of three international organizations selected by the WTO to provide model standards for sanitary and phytosanitary measures under the WTO's Agreement on the Application of Sanitary and Phytosanitary Measures.[151] The codes provide detailed health measures to assure sanitary safety in the trade of animals and animal products, and are to be used as a reference for veterinary services and other competent authority of importing or exporting countries.[152] "Both Codes in-

141. OIE, Objectives, http://www.oie.int/eng/OIE/en_objectifs.htm?e1d1 (last visited March 1, 2007) [hereinafter Objectives].

142. *Id.*

143. *Id.* The information is disseminated through the OIE website, email, and two periodicals: *Disease Information* (weekly publication) and *World Animal Health* (annual compilation).

144. *Id.*

145. *Id.*

146. *Id.* "The OIE notably offers expertise to the poorest countries to help them control animal diseases that cause livestock losses, present a risk to public health and threaten other Member Countries." *Id.*

147. *Id.*

148. OIE, The OIE International Standards 1, http://www.oie.int/eng/normes/guide%20to%20OIE%20intl%20standards%20v6.pdf [hereinafter OIE Standards].

149. *Id.* at 1.

150. *Id.* The Terrestrial Animal Health Code applies to mammals, birds, and bees. *Id.* The Aquatic Animal Health Code applies to fish, mollusks, and crustaceans. *Id.*

151. Stewart et al., *supra* note 139, at 50. For SPS agreement *see* discussion *infra* p. 18.

152. OIE Standards, *supra* note 148, at 1. The nature of the commodity and the status of animal health in the exporting country are considered in the health measures. *Id.* at 2. "[T]he health measures make reference only to the animal health situation in the exporting country as they assume that the relevant pathogen either

clude the requirement that countries analyze and manage risks of diseases that are transmitted across borders via international trade and give special attention to adopting measures for controlling diseases that minimize adverse effects on trade."[153] The codes traditionally focused on animal health and zoonoses but "now expanded to cover the new OIE mandates for animal welfare (*Terrestrial and Aquatic Codes*) and food safety (*Terrestrial Code*) in the framework of the new mandate of the OIE which is 'to improve animal health worldwide.'"[154]

The OIE develops and publishes two biological standards: the Manual of Diagnostics Tests and Vaccines for Terrestrial Animals and the Manual for Diagnostic Tests for Aquatic Animals.[155] The goal of the manuals is to provide general information for sampling methods and laboratory practices and detailed information on diagnostic testing procedures for laboratory technicians.[156] "The *Terrestrial Manual* also provides information on the principles of veterinary vaccine production and, where appropriate, the requirements for vaccines or diagnostic biologicals."[157]

In addition to the OIE's development of trade and biological standards, guidelines, and recommendations that address zoonoses, the OIE also takes an active role in bolstering the quality of national veterinary services. Performance, Visions and Strategy (PVS) is a tool created by OIE that "can assist national Veterinary Services to determine their actual level of quality, elaborate strategies with the private sector, establish priorities and plan the necessary investment programmes."[158] The PVS incorporates all of the standards described in the Terrestrial Animal Health Code.[159] Countries can use PVS through a self-evaluation procedure or request an official OIE team of assessors to evaluate their veterinary services and to verify compliance with OIE standards.[160]

Member countries benefit from using the PVS because it helps identify gaps in international standards and, after identification of such gaps, requests for donor support can be made to the government of the country or to international donors such as the World Bank.[161] "Thanks to the analyses carried out based on the PVS, the governments of the countries concerned will have the information they need in order to make the appropriate

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is not present in the importing country or, if it is present, that it is the subject of an official control or eradication programme." *Id.*

153. David G. Victor, *The Sanitary and Phytosanitary Agreement of the World Trade Organization: an Assessment After Five Years*, 32 N.Y.U. J. INT'L L. & POL. 865, 892-93 (2000).

154. OIE Standards, *supra* note 148, at 1.

155. *Id.*

156. *Id.*

157. *Id.* at 2.

158. OIE - The Veterinary Services, The New Tool for Evaluation of Veterinary Services (PVS) Using OIE International Standards of Quality and Evaluation, http://www.oie.int/eng/oie/organisation/en_vet_eval_tool.htm?e1d2 (last visited February 26, 2007); *See also* OIE, Performance, Vision and Strategy: a Tool for Governance of Veterinary Services Update 2006, at v- vii (2006), http://www.oie.int/downld/ENG_PVS_FINALWEB_09_02_2007.pdf.

159. OIE, The Veterinary Services, *supra* note 158.

160. *Id.* The OIE's goal is to evaluate 105 countries over a three-year period using the PVS tool. *See also* Press Release, OIE, Support for Governance Relating to the Prevention and Control of Animal Diseases: the OIE Takes Another Step Forward (Nov. 24, 2006), http://www.oie.int/eng/press/en_061124.htm.

161. OIE, The Veterinary Services, *supra* note 158.

political and budgetary choices and, where necessary, to prepare their applications for international funding."[162]

The OIE strives to improve transparency, efficiency, and speed in the dissemination of animal health information throughout the world. The OIE has implemented two systems to notify and inform interested parties about the evolution of animal diseases and potential threats: the World Animal Health Information System (WAHIS) and the World Animal Health Information Database (WAHID).[163] WAHIS provides real-time information and notification to Delegates of OIE member countries, partners of OIE, and to any person or institution who subscribes to the OIE's electronic mailing list.[164] OIE Delegates can not only access this information on the web, but they "can access this secure Web application and process the information needed to submit their immediate notifications and follow-up reports, six-monthly reports and annual reports."[165] WAHIS also allows member countries to map geographical coordinates of an event occurring in their country, which allows for illustrations of disease distribution worldwide.[166]

WAHID is an extensive database that offers all available data on animal diseases, including zoonoses, per country, region, month, and year.[167] "[T]he database also compiles country animal population, exceptional epidemiological events maps, global animal diseases distribution maps or comparative disease status between two countries. The latter application can help define health hazards linked to the trade of live animals and animal products between countries."[168]

The OIE's creation of international standards regarding animal diseases and its notification and information dissemination systems are key components that assist in addressing zoonoses, but another important area of focus for the OIE is scientific development. To strengthen the global fight against animal diseases, including zoonoses, the OIE has improved a worldwide network of Reference Laboratories[169] and Collaborating Centres.[170] "The network of 180 OIE Reference Laboratories and Collaborating Centres is also a unique source of expertise in setting science-based international standards and its develop-

162. Press Release, OIE, *supra* note 160.

163. *See* Press Release, OIE, OIE Launches WAHID, Unique Global Animal Health Database (Jan. 7, 2007), http://www.oie.int/eng/press/en_070109.htm.

164. Dr. Bernard Vallat, Director General, OIE, *Entering a New Era: the Birth of the WAHIS Web Application* (May 15, 2006), http://www.oie.int/eng/Edito/en_edito_mai06.htm (last visited Feb. 26, 2007).

165. *Id.*

166. *Id.*

167. Press Release, OIE, *supra* note 163. WAHID can be found on the OIE website home page or at http://www.oie.int/wahid. *Id.*

168. *Id.*

169. Press Release, OIE, OIE Reference Laboratories and Collaborating Centres First International Conference: Networking is Crucial to Fight Animal Diseases Worldwide (Dec. 27, 2006), http://www.oie.int/eng/press/en_061227.htm (last visited Feb. 26, 2007). "OIE Reference Laboratories are designated to pursue all the scientific and technical problems relating to a named disease on the OIE lists. The role of a Reference Laboratory is to function as a centre of expertise and standardisation of diagnostic techniques for its designated disease." OIE, Reference Laboratories, http://www.oie.int/eng/OIE/organisation/en_LR.htm?e1d8. There are 160 Reference Laboratories in the OIE's global network. *Id.*

170. Press Release, OIE, supra note 169. "OIE Collaborating Centres are centres of expertise in a specific designated sphere of competence relating to the management of general questions on animal health issues (for example epidemiology, risk analysis, etc.). In its designated field of competence, they must provide their expertise internationally. . . ." OIE, The Collaborating Centres, http://www.oie.int/eng/OIE/organisation/en_CC.htm?e1d8.

ment is key to the prevention and control of animal diseases."[171] The goal of this network is to enable developing and in transition countries to have a well-trained veterinary scientific community, so that early detection, reaction, and notification of outbreaks can take place.[172] The strategy to accomplish this goal is to team up existing laboratories and centers with laboratories and centers in developing countries.[173] "Improving laboratory capacity of countries would notably counter current cost and regulatory limitations relating to the transport of animal samples to be analysed."[174]

Another OIE led scientific development activity involves three permanent OIE working groups. The Working Group on Wildlife Diseases advises the OIE on all health problems relating to all wild animals, and prepares recommendations regarding surveillance and control measures for the most significant wildlife diseases.[175] The Working Group on Animal Welfare develops guidelines and recommendations on animal welfare to assist member countries in international negotiation.[176] One of the priorities for the Working Group on Animal Welfare is to develop standards to address when and how animals are killed for disease control purposes.[177] The Working Group on Animal Welfare's recommended standards were adopted and included in the OIE's Terrestrial Animal Health Code.[178]

The third permanent working group is the Working Group on Food Safety. This group works with other relevant international organizations to reduce foodborne risks from zoonoses.[179] Included in this working group's membership are experts from the FAO, WHO, and Codex Alimentarius Commission.[180] The purpose of the working group is "to review, develop and/or contribute to international food safety standards and guidelines, incorporating good animal production practice (including veterinary aspects) as it relates to food safety and taking into account a risk-based 'production to consumption' approach."[181] One of the group's initiatives resulted in "the development of standards on animal production food safety covering pre-slaughter issues and those prior to the first transformation of animal products, with a primary focus on food safety measures applicable at the farm level."[182] The group's cooperation with the Codex Alimentarius Commission has resulted in developing a framework for the roles and functions of Veteri-

171. Press Release, OIE, *supra* note 169.

172. *Id.*

173. *Id.*

174. *Id.*

175. OIE, Working Group on Wildlife Diseases, http://www.oie.int/wildlife/eng/en_wildlife.htm.

176. OIE, The OIE's Initiatives in Animal Welfare, http://www.oie.int/eng/bien_etre/en_introduction.htm.

177. *Id.*

178. *Id.*

179. OIE, Animal Production Food Safety, http://www.oie.int/eng/secu_sanitaire/en_introduction.htm.

180. *Id.* Working with these other organizations "is essential to avoid contradictory standards, to address gaps which may exist among current standards and to ensure the most effective utilisation of available expertise. To this end, the OIE has already strengthened formal and informal relationships with such international organisations and with relevant expert groups." *Id.*

181. OIE, Cooperation Between the Codex Alimentarius Commission and the OIE on Food Safety Throughout the Food Chain, OIE, http://www.oie.int/eng/secu_sanitaire/Cooperation%20CAC-OIE%20on%20food%20safety%20throughout%20the%20food%20cha. . . .pdf.

182. OIE, Animal Production Food Safety, supra note 179.

nary Services in food safety which addresses the "'production-to-consumption' continuum from a regulatory point of view."[183]

C. The World Trade Organization

The WTO plays a dominant global role in international trade law.[184] "Created in 1995, the WTO is a multilateral organization of 152 nations whose purpose is to facilitate the global movement of goods and services, as well as the protection of intellectual property, through the removal of trade barriers."[185] The WTO has a number of major agreements that indirectly involve public and/or animal health,[186] but the main focus of the agreements is to "describe conditions under which WTO members may subordinate trade considerations to other legitimate policy objectives such as the protection of public health and the environment."[187] The agreement that has the most impact on zoonotic diseases is the Agreement on the Application of Sanitary and Phytosanitary Measures (SPS or SPS agreement).

The SPS agreement sets out the basic rules for food safety and for animal and plant health standards.[188] The SPS is important in relation to zoonoses because it encourages governments to harmonize their national trade measures according to the international standards, guidelines, and recommendations developed by the three WTO selected international organizations: the Codex Alimentarius Commission, the OIE, and the FAO International Plant Protection Convention.[189] The joint FAO/WHO Codex Alimentarius Commission[190] is responsible for standards on food safety. The OIE develops the standards for animal health, and the FAO establishes standards for plant health through the International Plant Protection Convention.[191] WTO member states must adopt the SPS

183. *Id.*

184. Blum, *supra* note 55, at 217.

185. *Id.*

186. *Id.* at 218. The four primary agreements addressing health are: the Agreement on Technical Barriers to Trade, Sanitary and Phytosanitary Measures, Trade-Related Intellectual Property Rights, and Trade in Services. *Id.*

187. William Onzivu, *International Environmental Law, the Public's Health, and Domestic Environmental Governance in Developing Countries*, 21 Am. U. Int'l L. Rev. 597, 681 (2006).

188. Understanding the WTO Agreement on Sanitary and Phytosanitary Measures, World Trade Organization (WTO), May 1998, http://www.wto.org/english/tratop_e/sps_e/spsund_e.htm [hereinafter WTO]. "For the purposes of the SPS Agreement, sanitary and phytosanitary measures are defined as any measure applied: to protect human or animal life from risks arising from additives, contaminants, toxins or disease-causing organisms in their food; to protect human life from plant- or animal-carried diseases; to protect animal or plant life from pests, diseases, or disease-causing organisms; [and] to prevent or limit other damage to a country from the entry, establishment or spread of pests." *Id.*

189. *Id.*

190. Created by the FAO and WHO in 1963, the Codex Alimentarius Commission is responsible for:

> develop[ing] food standards, guidelines and related texts such as codes of practice under the Joint FAO/WHO Food Standards Programme. The main purposes of this Programme are protecting health of the consumers and ensuring fair trade practices in the food trade, and promoting coordination of all food standards work undertaken by international governmental and non-governmental organizations.

Codex Alimentarius, Welcome, http://www.codexalimentarius.net/web/index_en.jsp.

191. WTO, *supra* note 188.

agreement's terms.[192] Under the SPS, member governments have the explicit right to take measures to protect the health of their people, animals, and plants, as long as the measures are based on science, are necessary for such protection, and "do not unjustifiably discriminate among foreign sources of supply."[193] The recommended international standards are not treated as a floor or ceiling, but provide a guide to limit the use of sanitary measures as an unjustifiable barrier to trade.[194]

Ultimately, the SPS agreement is a trade agreement and not an agreement on animal or public health standards.[195] "[T]he SPS targets only the overuse of national health regulation. Thus, a government that abandoned all health regulations would not be in violation of the SPS."[196] Additionally, the SPS agreement only applies to health standards applied to imports.[197] Under the SPS, food safety and animal and plant health take priority over trade, as long as there is a demonstrable scientific basis "that there is a risk to health that justifies the utilization of trade measures that fall outside typical international safety standards."[198]

D. The Food and Agricultural Organization of the United Nations

The FAO is the primary organization of the United Nations to address world hunger.[199] It serves both developed and developing countries by providing a neutral forum to negotiate agreements and discuss policy.[200] The FAO provides information and expertise to assist "developing countries and countries in transition modernize and improve agriculture, forestry and fisheries practices and ensure good nutrition for all."[201] The FAO's role in addressing zoonoses may not seem as significant as other international organizations, but because it closely monitors the world's food supply[202] and assists in establishing international food safety standards,[203] the FAO does play a role in responding to animal health

192. Timothy J. Miano, Comment, *Understanding and Applying International Infectious Disease Law: U.N. Regulations During an H5N1 Avian Flu Epidemic*, 6 Chi.-Kent J. Int'l & Comp. L. 26, 45 (2006) (citing David P. Fidler, International Law and Infectious Diseases Chs. 7-8 (Clarendon Press 1999)); *See also Agreement on the Application of Sanitary and Phytosanitary Measures*, Apr. 15, 1994, Final Act Embodying the Results of the Uruguay Round of Multilateral Trade Negotiations, Annex 1A, Legal Instruments – Results of the Uruguay Round vol. 27 (1994) available at http://www.wto.org/english/docs_e/legal_e/15-sps.pdf.

193. WTO, *supra* note 188.

194. *See* Steve Charnovitz, *The Supervision of Health and Biosafety Regulation by World Trade Rules*, 13 Tul. Envtl. L.J. 271, 276-78 (2000).

195. *Id.* at 276.

196. *Id.*

197. *Id.* at 277.

198. Blum, *supra* note 55, at 219.

199. Food and Agriculture Organization of the United Nations (FAO), FAO at Work, http://www.fao.org/UNFAO/about/index_en.html.

200. *Id.*

201. *Id.*

202. *See* FAO, Global Information and Early Warning System on Food and Agriculture [GIEWS], http://www.fao.org/giews/english/about.htm.

203. *See* Codex *supra* note 190.

or food health-related emergencies.[204] In fact, the FAO has lead the fight against Avian Influenza over the last three years.[205]

The FAO Crisis Management Centre (CMC) opened in October 2006 for the purpose of addressing Avian Influenza and other such emergencies. The CMC is a joint collaboration between the FAO and OIE with the primary purpose of bringing rapid response to transboundary animal and plant diseases.[206] "Supported by advanced communications technology, the Centre operates around the clock . . . . Disease information is monitored and updated from around the globe continuously. When a suspected outbreak is reported, CMC can dispatch its experts to any hot-spot in the world in under 48 hours."[207]

Another surveillance and response program lead by FAO is the Emergency Prevention System for Transboundary Animal and Plant Pests and Diseases program (EMPRES). Developed in 1994,

> [t]he mission of the EMPRES-Livestock programme is to promote the effective containment and control of the most serious epidemic livestock diseases/Transboundary Animal Diseases (TAD) as well as newly emerging diseases by progressive elimination on a regional and global basis through international co-operation involving Early Warning, Early Reaction, Enabling research, Coordination.[208]

EMPRES provides real-time information to countries about outbreaks, and the program has contingency plans in place for specific diseases to allow for faster response.[209] EMPRES coordinates with national and international organizations and emphasizes scientific research to solve specific disease problems.[210] "The EMPRES provides assistance in training national epidemiologists and advises on the establishment of surveillance programmes in the least developed countries."[211]

IV. Existing Collaborations between the WHO, OIE, WTO, and FAO

Part III of this comment surveyed activities primarily taken by the WHO, OIE, WTO, and FAO in their individual capacity to directly or indirectly address emerging and re-emerging zoonotic diseases. Part IV discusses existing collaborations between these organizations and the effectiveness of such collaborations.

The OIE plays a central role in the battle against zoonotic diseases because of its close work with the veterinary services sector. Because it is so important that the veterinary services sector collaborate with the public health sector with regard to zoonoses, some of the most important existing collaborations are the exchange letters between the OIE and

204. *See* Press Release, FAO, New Crisis Management Centre Launched by FAO (Oct. 12, 2006), http://www.fao.org/newsroom/en/news/2006/1000421/index.html.
205. *Id.*
206. *Id.*
207. *Id.*
208. FAO, EMPRES Mission, http://www.fao.org/ag/againfo/programmes/en/empres/mission.html. EMPRES focuses primarily on rinderpest, but does include other epidemic diseases. K. Ben Jebara, *supra* note 1, at 712.
209. FAO, EMPRES Key Elements, http://www.fao.org/ag/againfo/programmes/en/empres/k_elements.html.
210. *Id.*
211. K. Ben Jebara, *supra* note 1, at 712.

the WHO, WTO, and FAO. The OIE has an existing cooperation agreement in place with each of the other organizations and many other international intergovernmental and non-governmental organizations.[212] Common to each cooperation agreement are the requirements that the parties cooperate closely in matters of common interest, participate in each organization's meetings, exchange all relevant reports and information, particularly on zoonotic disease outbreaks, and the parties remain in continuous consultation with one another.[213] These cooperation agreements have formed the basis for some of the collaborations between the organizations covered by this comment.

In July 2006, the WHO, FAO, and OIE launched the Global Early Warning and Response Systems (GLEWS). GLEWS is "the first joint early warning and response system conceived with the aim of predicting and responding to animal diseases including zoonoses worldwide."[214] The primary objectives of GLEWS are to share results of the disease tracking systems of the three organizations and to improve the information verification channels.[215] The web-based electronic platform will send alert messages that:

> will describe the possible implications of disease spread among animals at national, regional and international level and its potential public health impact. If there is a clear indication that a joint on-site assessment or intervention is required, the response mechanisms of the three organizations will be activated in a collaborative fashion.[216]

The goal of GLEWS is better prediction and prevention. GLEWS is a strong collaborative effort by these three agencies. Still in its infancy, we are not sure how the results will come to fruition. The true strength of GLEWS is the fact that it offers full transparency between these three organizations. Input into the system is all of the tracking data, activities, and initiatives of each organization, including their work with other organizations such as non-governmental organizations.[217] Though GLEWS configures this information and then predicts and determines whether a response or intervention is required, without necessary resources to respond to the problem, the system is undermined. The disease problems that GLEWS focuses on can only be fixed where the problems occur. Because all three of these organizations have a strong worldwide network, it will be possible that experts from a collaborating research center or laboratory will be within proximity of the alleged outbreak.

Another way the WHO, OIE, WTO and FAO collaborate is through the use of global funds. The intergovernmental organizations work together to pool money from donors,

212. OIE, Cooperation Agreements Between the OIE and Intergovernmental Organisations and Other International Nongovernmental Organisations, http://www.oie.int/eng/OIE/actes/en_accords.htm.

213. *See* OIE, Agreement Between the World Health Organization and the Office International des Epizooties, Dec. 16, 2004, http://www.oie.int/eng/OIE/accords/en_accord_oms_2004.htm; OIE, Agreement Between the Food and Agriculture Organization of the United Nations and the Office International des Epizooties, May 24, 2004, http://www.oie.int/eng/OIE/accords/en_accord_fao_2004.htm; Agreement Between the World Trade Organization and the Office International des Epizooties, May 4, 1998, http://www.oie.int/eng/OIE/accords/en_accord_omc.htm.

214. Press Release, FAO, Global Early Warning System for Animal Diseases Transmissible to Humans (July 24, 2006), http://www.fao.org/newsroom/en/news/2006/1000369/index.html.

215. K. Ben Jebara, *supra* note 1, at 713.

216. Press Release, FAO, *supra* note 214.

217. *Id.*

and then utilize the funds for project-based activities to help developing countries meet international standards for dealing with disease outbreaks and related issues.[218] Two recent fund examples are the OIE's World Animal Health and Welfare Fund (OIE Fund)[219] and the Standards and Trade Development Facility (STDF).[220] Both funds were created by the four organizations covered by this comment with the addition of the World Bank. "When the avian influenza crisis struck, the OIE, FAO and WHO advocated the use of [the OIE Fund] to promote good governance worldwide so that countries can improve early detection and respond more rapidly to animal disease outbreaks . . . ."[221] The STDF was created in 2002 for the purpose of assisting developing countries in implementing international sanitary and phytosanitary standards.[222] The STDF "places much greater emphasis on the facility acting as a vehicle for coordination, fund mobilization and the identification and dissemination of best practice in the provision of SPS-related technical cooperation and capacity building."[223]

One of the final areas of collaboration, which relates to all of the above activities, is that these organizations have increased the number of joint meetings and planning discussions regarding zoonoses.[224] For zoonotic diseases to be properly addressed, there must be an international voice emphasizing the significance of zoonoses, and cooperation through joint meetings allows potential donors to hear this voice. Without the financial resources from donor countries, the organizations will not be able to assist developing countries in meeting the international standards for dealing with disease outbreaks and related issues.[225]

V. The Significance of Zoonoses and the Emergence and Re-emergence of Zoonotic Diseases Mandates Further Action by and Between the WHO, OIE, WTO, and FAO

Collaboration between human and animal health international intergovernmental organizations is important to address the threat of zoonotic diseases. The importance of this collaboration is compounded by the necessity of collaboration between human and animal health sectors at the local, national, and regional levels.[226]

> In most poor countries, there is no mechanism by which human cases of zoonotic diseases are automatically reported to veterinarians nor animal cases to health services. Thus, the full burden of these diseases is not recognized, and more importantly,

218. See Press Release, WTO, *supra* note 11; Press Release, FAO, Agencies Agree on Plan for Food Safety, Animal and Plant Health Assistance (Dec. 18, 2006), http://www.fao.org/newsroom/en/news/2006/1000470/index.html.

219. *See* Press Release, WTO, *supra* note 11.

220. *See* Press Release, FAO, *supra* note 218.

221. Press Release, WTO, *supra* note 11.

222. Press Release, FAO, *supra* note 218. "To date, the STDF has approved 23 projects and 21 project-preparation grants benefiting developing and least-developed countries." *Id.*

223. *Id.*

224. *See* OIE, International Meetings, http://www.oie.int/eng/manifestations/en_manifs2006.htm.

225. K. Ben Jebara, *supra* note 1, at 713.

226. *See* Neglected Zoonotic, *supra* note 125, at 2.

the risk posed is not appreciated and the opportunity to prevent transmission between animals and people is missed.[227]

For many countries zoonoses is not a priority in the human health or animal health sectors, and there is a deep human resource gap in the number of professionals committed to zoonoses control activities.[228] Effective zoonoses control relies on the partnerships between the local, national, and regional medical and veterinary groups, the international intergovernmental organizations, and donors.[229]

A. Suggestions for Future Developments in Collaboration

There are several areas future developments in collaboration must address: the creation of zoonoses specific international standards, the promotion of science and interdisciplinary research in zoonoses, the emphasis on funding for zoonoses control measures in developing countries, and the education of people regarding zoonoses.

The WHO, OIE, WTO, and FAO have made their intent clear that they wish to prevent the emergence and re-emergence of zoonotic diseases. Each organization is responsible for the development of an area of international standards that directly or indirectly affect zoonoses. The OIE develops trade and biological standards, guidelines, and recommendations for animal diseases and welfare. The WHO develops International Health Regulations that provide standards for preventing and dealing with public health emergencies of international concern. The WTO provides trade standards and the framework for sanitary and phytosanitary measures in trade, of which it adopts the standards developed by the OIE and Codex Alimentarius (FAO/WHO). The standards as they exist today are too broad or too compartmentalized to approach zoonoses in an effective manner. A zoonotic disease that constitutes a significant outbreak will most likely be covered in the broad sweep of the WHO International Health Regulations, and it will also likely fall within the narrow standards of the OIE if it involves trade. But to properly address the current and future developing zoonoses, a clear set of international standards should be agreed upon by these organizations to address the common threats within their competencies that involve zoonoses.

The compartmentalized approach creates a problem with regard to local niche areas where a zoonotic disease develops that does not fall within trade. The poorest developing countries would be likely victims because of the lack of resources to meet international standards, such as a weak veterinary services infrastructure. In this situation, such a country would be dependant on the ancillary activities of the intergovernmental organizations to obtain the assistance it needs (i.e. Research Laboratories, global funds, and GLEWS). By integrating the zoonoses recommendations and guidelines of the OIE into international standards, a less fallible system would be in place to determine when intervention is necessary. The new standards would have to demand a working relationship and linkage between the public health and animal health sectors. If new international standards were developed or existing standards amended, the education of member countries on the new or amended standards would be of utmost importance. The standards should also contain

227. *Id.* at 9.
228. *Id.*
229. *Id.* at 25.

an enforcement mechanism that not only includes dispute resolution, but also a method of sanctioning countries that are able but unwilling to comply within due reason of the standards.

In a 2005 WHO meeting, that included the participation of OIE and FAO, a working group suggested the setting up of a joint FAO/WHO body for the oversight of zoonoses control in collaboration with the OIE and another veterinary specialist group.[230] The focus of the group would be to support regional initiatives. Another suggestion was to form an "International Alliance for Zoonotic Diseases."[231] The formation of additional intergovernmental bodies or alliances is not necessary given the areas of competencies of each organization, their global networks, and the increased collaboration between the organizations. The organizations have taken steps to create a comprehensive early detection and rapid response system. Instead of adding a new body or alliance and disrupting the existing competencies, the existing organizations should create and agree upon a set of standards that you would expect from an International Alliance for Zoonotic Diseases.

The promotion of science and interdisciplinary research[232] in zoonoses is significant to the control of future zoonotic diseases. One method to encourage interdisciplinary research is through the formation of research centers dedicated to studying zoonoses.[233] Even if dedicated research centers are not formed, at minimum, existing research laboratories and collaboration centers must work together on field-based epidemiologic studies. A proper balance must be determined so that organizations are not duplicating efforts, but are also working together to develop diagnostic kits, vaccines, and epidemiological prediction patterns for certain zoonoses. Because under-diagnosis is a problem in developing countries, it is imperative that developing countries participate in such research. The centers would serve as a diagnostic focal point. The creation of additional research centers in developing countries also helps in the training and introduction of more scientific experts into the study of zoonoses and other diseases. The research center's education process would also strengthen the infrastructure of veterinary services and the link between the veterinary services sector and public health sector by having representatives work together in the field studies.

Resource constraints are one of the most significant reasons for weaker veterinary and public health infrastructures.[234] "Coincident with the recognition of a new and unprecedented era of emerging and re-emerging infectious diseases, most countries are experiencing reductions in funding to maintain current public health and animal health infrastructures and lack resources for construction, modernization, enhancement, and recruitment."[235] Investment and budget allocations are needed to strengthen the public and animal health infrastructures, especially for developing countries. To persuade countries to provide funding for zoonoses research and response initiatives, the WHO, OIE, WTO, and FAO must collectively speak with a unified voice regarding the importance of zoonoses initiatives. The existing global funds have provided some capital for assisting developing countries, but significantly more is needed.

230. *Id.* at 30.
231. *Id.*
232. King et al., *supra* note 3, at 720.
233. *Id.*
234. *Id.* at 721.
235. *Id.*

Health education in general about zoonoses may deter some of the factors that cause the emergence and re-emergence of zoonotic diseases. "Effective communication between public health officials and the general public is vital to controlling zoonotic disease, particularly when human-to-human transmission is involved (e.g. SARS or Nipah virus infection)."[236] Promotion of personal hygiene, sanitary practices, and hygienic food handling would assist in the prevention of the spreading of zoonotic diseases. "[B]ecause [zoonoses] tend to be clustered in certain locations and among certain high risk groups . . . both public awareness campaigns and preventive measures can be very focused, targeting specific areas and communities."[237] Particularly in developing countries, where workers are in close quarters with livestock, the education of sanitary measures could have a dramatic impact on a higher risk group.

VI. Conclusion

International organizations must play a more proactive role in addressing emerging and re-emerging zoonoses. Horizontal collaboration between the international organizations is of the utmost importance. To effectively approach zoonoses, the international organizations must work efficiently in a collaborative manner. The organizations must continue to develop guidelines and recommendations to improve the linkage between the veterinary health sector and the public health sector. The problem of zoonotic diseases cannot be successfully approached by either sector alone. Surveillance and rapid response measures such as GLEWS must remain a priority for the international organizations. Global detection and rapid response are the only safety nets to make up for a lack of resources in many developing countries.

The collection of scientific information and the development of diagnostic stations throughout the world are also vital to preventing the transboundary spread of emerging and re-emerging zoonotic diseases. The international community must increase student interest in the human or animal health sector, specifically with a focus on zoonoses. Small steps, such as public education measures about zoonoses, will assist in preventing the spread of zoonoses, but ultimately, funding is the most important step. In order to receive the funding required to make an impact on zoonoses, the international organizations must speak as one regarding the importance of zoonoses. Significant recent events such as SARS and the Avian Influenza have caused great concern about the future of zoonoses. A unified approach by international organizations that sets forth clear and specific international standards will allow member countries to more easily prepare and hopefully prevent zoonotic disease outbreaks within their borders.

236. WHO, Report of the WHO/FAO/OIE Joint Consultation on Emerging Zoonotic Diseases, http://whqlibdoc.who.int/hq/2004/WHO_CDS_CPE_ZFK_2004.9.pdf.

237. Neglected Zoonotic, *supra* note 125, at 11.